What is claimed is:

1. An apparatus for measuring transfer of components across a tissue, comprising:

a support plate;

an array of samples supported by the support plate;

a tissue specimen overlaying the array of samples; and

a reservoir plate secured to a side of the tissue specimen opposite the array of samples, the reservoir plate having an array of reservoirs.

2. The apparatus of claim 1, wherein each sample of the array of samples comprises a component-in-common and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of:

(i) the identity of the additional components,

(ii) the ratio of the component-in-common to the additional component, or

(iii) the physical state of the component-in-common.

3. The apparatus of claim 2, wherein the component-in-common is a pharmaceutical, a dietary supplement, a nutraceutical, or an alternative medicine.

4. The apparatus of claim 2, wherein the additional component is an adhesive, an enhancer, an additive, a solvent, an excipient, or a combination thereof.

5. The apparatus of claim 4, wherein the enhancer is a chemical enhancer, a lipid permeation enhancer, a solubility enhancer, or a combination of enhancers.

6. The apparatus of claim 4, wherein the adhesive is a polyisobutylene, a silicone, or an acrylic adhesive.

7. The apparatus of claim 1, wherein each sample in the array of samples is a solid source sample or a liquid source sample.

8. The apparatus of claim 1, wherein the tissue specimen comprises skin tissue.

9. The apparatus of claim 8, wherein the skin tissue comprises epidermis or stratum corneum.

10. The apparatus of claims 8 or 9, wherein the skin tissue is human skin tissue, animal skin tissue or engineered skin tissue.

11. The apparatus of claim 1, wherein the tissue specimen is divided into a plurality of segments, wherein each segment covers a sample and is sealed between the support plate and an annular portion of the reservoir plate defining a reservoir for each sample.

12. The apparatus of claim 11, wherein the tissue specimen is divided into a plurality of segments by mechanical cutting, scribing, laser cutting, scoring or crimping.

13. The apparatus of claim 1, wherein each reservoir comprises a passage extending through the reservoir plate and is aligned over a sample.

14. The apparatus of claim 13, further comprising a reservoir medium within at least one of the reservoirs.

15. The apparatus of claim 14, wherein the reservoir medium is a fluid or a solution.

16. A method of measuring tissue barrier transfer of a sample, comprising:

preparing an array of samples, each sample comprising an active component and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of

the identity of the active component,

the identity of the additional components,

the ratio of the active component to the additional component, or

the physical state of the active component;

overlaying the array of samples with a tissue specimen;

securing a reservoir plate to a side of the tissue specimen opposite the array of samples, the reservoir plate having an array of reservoirs corresponding to the array of samples;

filling the array of reservoirs with a reservoir medium; and

measuring concentration of one or more sample components in each reservoir to determine transfer of said sample components from each sample across the tissue specimen.

17. A method of analyzing tissue barrier flux of a sample, comprising:

preparing an array of samples, each sample comprising a component-in-common and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of:

the identity of the additional components,

the ratio of the component-in-common to the additional component, or

the physical state of the component-in-common;

overlaying the array of samples with a tissue specimen;

securing a reservoir plate to a side of the tissue specimen opposite the array of samples, the reservoir plate having an array of reservoirs corresponding to the array of samples;

filling the array of reservoirs with a reservoir medium; and

measuring concentration of the component-in-common in each reservoir as a function of time to determine flux of the component-in-common from each sample across the tissue specimen.

18. The method of claims 16 or 17, wherein each sample in the array of samples is a solid source sample or a liquid source sample.

19. The method of claim 16, wherein the active component is a pharmaceutical, a dietary supplement, a nutraceutical or an alternative medicine.

20. The method of claim 17, wherein the component-in-common is a pharmaceutical, a dietary supplement, a nutraceutical or an alternative medicine.

21. The method of claim 17, wherein the additional component is an excipient, a solvent, an adhesive, an enhancer, an additive, or a combination thereof.

22. The method of claim 21, wherein the enhancer is a chemical enhancer, a lipid permeation enhancer, a solubility enhancer, or a combination of enhancers.

23. The method of claim 21, wherein the adhesive is a polyisobutylene, a silicone, or an acrylic adhesive.

24. The method of claims 16 or 17, further comprising the step of dividing the tissue specimen into a plurality of segments, wherein each segment covers a sample.

25. The method of claim 24, wherein the step of dividing comprises mechanical cutting, laser cutting, scribing, scoring or crimping.

26. The method of claim 24, further comprising the steps of:
imaging each segment to detect an inhomogeneous segment; and
correcting for an inhomogeneous segment.

27. The method of claim 26, wherein the correcting step comprises any of:
removing the inhomogeneous segment;
ignoring concentration measurement associated with the inhomogeneous segment;
adjusting concentration measurements to correct for the inhomogeneous segment; or
repairing the inhomogeneous segment.

28. A method of determining tissue barrier flux of a component, comprising:
preparing an array of samples, each sample comprising a component-in-common and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of:
the identity of the additional components,
the ratio of the component-in-common to the additional component, or
the physical state of the component-in-common;
overlaying the array of samples with a tissue specimen; and

determining flux of the component-in-common from a first sample in said array of samples across a tissue specimen.

29. The method of claim 28, wherein the determining step further comprises measuring a concentration of the component-in-common in a reservoir positioned on an opposite side of the tissue specimen from the first sample to determine flux of the component-in-common across the tissue specimen.

30. The method of claim 28, further comprising:

securing a reservoir plate to a side of the tissue specimen opposite the array of samples, the plate having an array of reservoirs corresponding to the array of samples;

filling the array of reservoirs with a reservoir medium; and

measuring concentration of the component-in-common in each reservoir as a function of time to determine flux of the component-in-common from each sample across the tissue specimen.

31. The method of claim 28, further comprising the step of dividing the tissue specimen into a plurality of segments, wherein each segment covers a sample.

32. The method of claim 31, wherein the step of dividing comprises mechanical cutting, laser cutting, scribing, scoring or crimping.

33. The method of claim 31, further comprising the step of imaging each segment to detect an inhomogeneous segment.

34. The method of claim 33, further comprising the step of correcting for an inhomogeneous segment, wherein said correcting step comprises any of:

removing the inhomogeneous segment;

ignoring concentration measurement associated with the inhomogeneous segment;

adjusting concentration measurements to correct for the inhomogeneous segment; or

repairing the inhomogeneous segment.

35. The method of claim 28, wherein the step of overlaying further comprises:

dividing a tissue specimen into a plurality of segments;

imaging said segments for desired properties;

selecting a first segment having the desired properties; and

overlaying the first segment over the first sample.

36. The method of claim 28, wherein each sample in the array of samples is a liquid source sample or a solid source sample.

37. The method of claim 28, wherein the tissue specimen is skin tissue.

38. A method of determining optimal transdermal compositions or formulations, comprising:

preparing an array of samples, each sample comprising an active component and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of:

the identity of the active component,

the identity of the additional components,

the ratio of the active component to the additional component, or

the physical state of the active component;

overlaying the array of samples with skin tissue; and

determining flux of the active component from each sample in said array of samples across the skin tissue to determine an optimal transdermal formulation.

39. A method of determining optimal transdermal compositions or formulations, comprising:

preparing an array of samples, each sample comprising an component-in-common and at least one additional component, wherein each sample differs from at least one other sample with respect to at least one of:

the identity of the additional components,

the ratio of the component-in-common to the additional component, or

the physical state of the component-in-common;

overlaying the array of samples with a skin tissue; and

determining flux of the component-in-common from each sample in said array of samples across the skin tissue to determine an optimal transdermal formulation.

40. The method of claims 38 or 39, further comprising the step of dividing the tissue specimen into a plurality of segments, wherein each segment covers a sample.

41. The method of claim 40, wherein the step of dividing comprises mechanical cutting, laser cutting, scribing, scoring or crimping.

42. The method of claim 40, further comprising the step of imaging each segment to detect an inhomogeneous segment.

43. The method of claim 41, further comprising the step of correcting for an inhomogeneous segment, wherein said correcting step comprises any of:

removing the inhomogeneous segment;

ignoring concentration measurement associated with the inhomogeneous segment;

adjusting concentration measurements to correct for the inhomogeneous segment; or

repairing the inhomogeneous segment.

44. An apparatus for measuring transfer of components across a tissue, comprising:

a base plate;

a spacer plate;

an array of solid source samples supported by the spacer plate;

a tissue specimen overlaying the array of samples;

a reservoir plate secured to a side of the tissue specimen opposite the array of samples, the reservoir plate having an array of reservoirs; and

a clamping means for creating a seal between the reservoir plate and the tissue specimen.

45. The apparatus of claim 44, further comprising a top plate.

46. The apparatus of claim 44, wherein one or both of the spacer plate and the reservoir plate are clear or see-through.

47. The apparatus of claims 44 or 46, wherein the base plate is aluminum.

48. The apparatus of any one of claims 44, 45, or 46, wherein the clamping means comprises screws passing through the apparatus and secured to the base plate.

49. The apparatus of claim 47, wherein the clamping means comprises screws passing through the apparatus and secured to the base plate.